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Metathesis of Proto-Indo-European Sonorants

Abstract: Proto-Indo-European roots as reconstructed in the literature regularly result in formally and semantically similar yet distinct roots. Amongst them, some of the doublets of the form *CeH/Ce̯iH* and *CeH/Ce̯uH* have been explained as reflecting laryngeal metathesis based on nominal formations in *-i-* and *-u-*, thus creating secondary roots. In this paper, we advocate for a more general version of this law, whereby any glide or resonant can be involved in such a metathesis. It explains a number of doublets of the form *CeH/CeRH* as the result of such a metathesis based on nominal forms exhibiting specific stress patterns. It results in new etymological proposals as well as in a reanalysis of the facts generally explained as reflecting the so-called Saussure effect.

Introduction

It has long been observed and can easily be confirmed by a quick look at the *LIV* (*LIV*^{2}, *LIV*^{2015}) that there are numerous PIE root pairs that share a similar or even identical meaning and are formally very close. In several cases, it has been proposed that one of the two roots involved is secondary and was created from forms based on the first, primary one via a process involving a phonetic[1] or a morphological

1 A well-known case thereof is a result of the Kortlandt-effect (e.g. **med-* 'to measure' vs. **meh$_1$-* 'id.'). See also for instance **h$_2$eng-* (*IEW*:45–47) 'to bend' vs. **h$_2$enk-* 'id.' (*LIV*^{2}:268, *IEW*:45f.). Steer (2016) considers the former as primary and the latter as resulting from a sonority loss of the **-g-* next to a voiceless consonant, followed by a metanalysis of the resulting forms.

phenomenon. Among such morphological phenomena, the most frequent are composition and derivation based on nominal or verbal stems. On these issues, see for instance de Vaan (2016).

However, many cases resist such direct explanations and require further analysis. It is for instance the case of numerous pairs of the form **CeC-/*CeRC-*, where **R* can be a sonorant or a glide **i̯* or **u̯*— we shall provide below many examples thereof.

At first sight, such doublets can be described as a type of (apparent) infixation. Steer (2016), who specifically studies pairs of the form **CeC-/*Cei̯C-*, goes even further and proposes to explain this apparent infixation as the remnant of an old infix **-i-*. However, research in linguistic typology makes such an explanation unlikely. As Plank (2007) writes,

> "the (almost) only way infixes can come about is from adfixes being metathesised inside stems, around initial or final consonants or other phonological constituents, serving to improve syllable or other prosodic structures; in the company of stems where prosodic structures are unobjectionable anyhow, adfixes will remain external."

In other words, an explanation based on a metathesis phenomenon would be typologically more plausible than positing a very old infixation process.

In the case of the **CeC-/*Cei̯C-* doublets studied by Steer (2016), it can be shown that this hypothetical *-i-* is actually a mirage and rather results from metanalysis phenomena. An example thereof is the (apparent) doublet consisting of the PIE roots **bʰleǵ/g-* 'to shine' (*LIV*²:86) and **bʰlei̯g-* 'id.' (*LIV*²:89). The latter is only attested in Germanic and Balto-Slavic, two language families where metanalysis phenomena are particularly frequent. Starting from **bʰleǵ/g-*, one can posit a thematic root present Com. Germ. **blikanᵃⁿ* 'to shine' < **bʰléǵ/g-e/o-* next to a causative/iterative **blakijanᵃⁿ* 'to sparkle; to shine, to light (up)' < **bʰloǵ/g-éi̯-e/o-*, hence OHG *blecchen* 'to sparkle; *sehen lassen*'. The present **blikanᵃⁿ* 'to shine' was reanalysed as a zero-grade present from a Germanic neo-root **blik-*, productively resulting in an apophony **blik-*, **bleik-*, **blaik-* (first-class strong

verb).[2] Balto-Slavic facts can be explained in a similar way: starting from Com. BSl. **bleg-*, **bilsk-* < **b^{h}l̥ǵ/g-sḱ-é/ó-*, hence **blisk-ē-*, seen in OCS *blьštati sę* 'to sparkle, shine' and the inchoative *blьsnǫti* 'to light (up)' (Vaillant, GCLS III:171), which eliminates the need for positing a PIE root **b^{h}leû̯g-*.[3]

However, such explanations do not apply to all doublets of the form **CeC-/*CeC̯C-*. And they cannot apply to other types of doublets of the more general form **CeC-/*CeRC-*.

When **R* is a glide **î̯* or **û̯*, another type of analysis has been proposed for *seṭ*-roots, i.e. doublets of the form **CeH-/*CeC̯H-* or **CeR̥H-*. In short, starting from the primary root **CeH-*, a nominal or present stem **CeH-i-* or **CeH-u-* can result, in certain environments, in a metathesis of the glide, hence **CiH-* or **CuH-*, which can in turn serve as the basis for a neo root **CeC̯H-* or **CeR̥H-*, either directly or by resyllabification.

In this paper, we further investigate and extend this line of research, studied among others by Steer (2016) and Garnier (2016). We shall concentrate on the three following fundamental questions:

1. In which environments does this phenomenon occur? We show that it is conditioned by a rhythmic law and by the presence of a suffix with a consonantal *anlaut*;

2 Note also OE *blīcan* 'to shine, to gleam' (< **bleik-an^{an}*) and Com. Germ. **blaika^{z}* 'pale' reflected by ON *bleikr* [adj.] 'id.', OE *blāc* [adj.] 'id.', OS *blēk* [adj.] 'id.', OHG *bleih* [adj.] 'id.' (Kroonen 2013:66).

3 The same holds for the triplet PIE **h$_3$reǵ-* 'to stretch, to move in straight line' (*LIV^2*:304), **reC̯ǵ-* 'id.' (*LIV^2*:503) and **h$_3$reC̯ǵ-* 'id.' (*LIV^2*:503 fn. 1). Goth. *rikan* 'to heap up, to collect' (< **h$_3$réǵ-e/o-*) is paired with the causative/iterative Goth. *rakjan* 'to stretch (something)' (< **h$_3$roǵ-éC̯-e/o-*). Within Germanic, the stem **rik-*, the full-grade of a fifth-class verb, was metanalysed as the zero-grade of a first-class strong verb, hence an iterative **raik-jan^{an}* seen in OE *rǣc(e)an* 'to extend, to stretch out'. The zero-grade PIE **h$_3$ŗǵ-tí-* can explain OIr. *rigid* (passive *regair*) 'to extend (something), to rule', possibly an old *tudáti* Com. Celt. **rig-e-ti* (< **h$_3$ŗǵ-é-ti*). Lith. *rìžti* 'to stand on end' can also reflect the zero-grade, via a resyllabification analogical with forms in **rež-* (the expected infinitive would be ***ìržti*).

2. Does this phenomenon originates in a metathesis of the **R* or in a loss of the laryngeal? We show that the primary phenomenon is a metathesis of the **R*, and that the laryngeal loss is secondary, in certain environments.
3. Is this phenomenon limited to glides? We show that it also applies to sonorants, which makes it possible to explain triplets of the form **CeH-/*CeRH-* where **R* can be not only **i̯* or **u̯* but also **r*, **l*, **m* or **n*.

These results have several implications, which we shall also discuss in this paper. Firstly, throughout the discussion, we shall suggest new etymologies that are made possible by this extended metathesis phenomenon. Secondly, it will allow us to introduce a new PIE root **b^{h}eh$_2$-* (2) 'to perforate, to bud, to grow (vertically)' (homonymous with **b^{h}eh$_2$-* (1) 'to shine'). Thirdly, we shall show that this extended metathesis phenomenon provides a new explanation for facts customarily gathered together under the term 'Saussure-effect'.

1. PIE **Cé/óH-i → *CiH-tó-* (< **CəH-i-tó-*)

In the case of the suffix *-i-*, the metathesis mechanism studied in this paper can be formalised as follows. The starting point is a root of the form **CeH-*, from which a (nominal) derivative **Cé/óH-i-* is formed. This derivative serves as a basis for a secondary zero-grade derivation with a consonantal suffix of the general form **-C(C)V̆-* (for instance **-tó-* or **-sk̂-é/ó-*), hence **CəH-i-C(C)V̆-*, with three consecutive short vowels whose third vowel is stressed. Such a metrical pattern is unstable and triggers a metathesis of the *-i-* and the laryngeal, hence **CiH-C(C)V́-*. The resulting segment **CiH-* has all the surface properties of a zero-grade, which can lead to the apparition of a neo-root **Ce̯iH-* and new lexemes derived from this root.[4]

4 Note that the secondary **i* at the Indo-Iranian stage undergoes the same metathesis, as shown by Kümmel (2016). He explains Ved. *mi-mā-/mi-mī-* 'to measure' (< PIE **mi-méh$_1$-*) by an etymon IIr. **mi-máH-/*mi-mHi-* resulting in **mi-máH-/*mi-miH-* (p. 217). He shows that the Indo-Iranian treatment of the injonctive **mráu̯H-t* 'he spoke' contained an anaptytic **-i-*, i.e. IIr. **mráu̯Hi-t → *mráu̯iH-t* hence Ved. *á-bravīt*. According to

1.1. *b^hriH-tó- (< *$b^hərH$-i-tó-) ‘to cut’

The PIE root *$b^hreu̯H$- ‘to cut’ (*LIV*^{2}:92)[5] can be explained as a secondary root based on an acrostatic neuter noun *$b^hórH$-i ‘cut’ based on the root *b^herH- ‘to pierce, to strike’ (*LIV*^{2}:80), attested for instance in YAv. *tiži.bāra-* ‘sharp-edged’. The intermediate form would be an appurtenance noun *b^hriH-tó- (< *$b^hərH$-i-tó- [◡ H ◡ ◌́]) ‘sharp object, which has sharpness’.[6]

Our metathesis mechanism can here explain the metathesis *CHi/u-C > *Ci/uH-C posited by Mayrhofer (1986:175) for Ved. *pī-tá-* ‘(that has been) drunk’ (< PIE *pih_3-tó-*, which we reconstruct as from *$pəh_3$-i-tó-*), and suggested by Kloekhorst & Lubotsky (2014) to analyse the form *$snih_1$-tó-* ‘turned towards’ (< *snh_1-i-tó-* ‘intertwined’, which we reconstruct as from *$snəh_1$-i-tó-*). Both examples exhibit the scheme [◡ H ◡ ◌́].

From a phonetic point of view, it is possible to draw a parallel between the metathesis of type PIE *$pəh_3$-i-tó- [◡ H ◡ ◌́] > *pih_3-tó- [– ◌́] and the metathesis that results in long sonorants in classical languages: PIE *$ǵənh_1ə$-tó- [◡ H ◡ ◌́] ‘born, conceived’ > *$ǵnəh_1$-tó- [– ◌́], seen in OLat. *gnātus* ‘born’ (< pre-Com. It. *$gnaH$-tó- < Post-IE *$ǵnəh_1$-tó-*) and by Com. Gk. *$gnētós$ ‘born’[7] (< pre-Com. Gk. *$gnə_1H$-tó < post-IE *$ǵnəh_1$-tó-*).[8]

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him, the absence of the *-*i*- in Iranian can be explained by an analogy: Com. Ir. *$mráu̯$-t ‘he spoke’ would be reformed based on the aorist *$sráu̯$-t ‘he heard’ (p. 219). As an argument in favor of this analysis, he quotes Av. *jaini-* [f.] ‘woman’ reflecting an etymon IIr. *$ǰánHi$ (< PIE *g^uénh$_2$) ‘id.’, with the same treatement as Ved. *jáni* ‘id.’ (p. 220).

5 Cf. Ved. *bhrīṇánti* (RV 2.28.7) ‘they consume’, YAv. *pairi.brīnaŋha* ‘have [your hair] cut’, OCS *brijǫ*, *briti* ‘to shave’. The Vedic form is for †*bhriṇ°* (the long root vowel is from the PPP *$bhrī$-tá-*).

6 Another possibility would be to posit an old acrostatic present *$b^hórH$-i-$h_2eu̯$ ‘to slice, to cut’, whose present suffix *-*i*- would have been secondarily integrated into the root.

7 Replaced by γενητός (but cf. the fossil form *in fine compositi* Διό-γνητος ‘Diogenes’).

8 This “law of the three morae” is not effective in Indo-Iranian, because the *samprasāraṇa-* shift from PIE *-$n̥$- to IIr. *-*a*- is older than the emergence

1.2. **ǵʰóh₂-i* [n.] ‘crack’

The PIE telic root **ǵʰeh₂-* ‘to split, crack; to be split’ (with an *s* mobile variant **s-kʰeh₂-*) has an inchoative present **ǵʰh₂-sḱ-é/ó-* reflected by Gk. χάσκω ‘to be open, gape wide’. This root can explain a series of forms *via* a deverbal noun **ǵʰóh₂-i* [n.] ‘crack’.[9] This noun served as a basis for a denominal verb **ǵʰəh₂-i-sḱ-é/ó-* with the transparent meaning ‘to crack’, which exhibits the scheme [˘ H ˘ ˊ], thus triggering the laryngeal metathesis, resulting in **ǵʰih₂-sḱ-é/ó-* attested by Lat. *hīscō* ‘to open up’. This secondary root is in fact posited by Kümmel (*LIV*[2015] s.v. **ǵʰeh₁(i̯)-* → **ǵʰeh₂(i̯)-* ‘to open, open the mouth’).

Based on the variant with *s* mobile, a secondary derivative **skʰóh₂-í-d-* [f.] ‘crack’ was built, hence a derivative of appurtenance **skʰóh₂-id-ó-* (Core IE **skʰoi̯d-ó-*). In turn, it served as a basis for a secondary root **skʰei̯d-* ‘to split’ reflected by the Vedic root *CHID-* ‘id.’, Lat. *scindō* ‘id.’ and Com. Germ. **skeitanᵃⁿ* ‘id.; *scheißen*’ (from **us-skeit-* ‘to separate, discharge’).

1.3. **gʷih₃-u̯ó-* (< **gʷəh₃-i-u̯ó-*) ‘*fed, kept alive, alive’

Based on a PIE root **gʷeh₃-* ‘to put to graze, to pasture’ one can build the derivatives **gʷóh₃-i* [n.] ‘pasture’ (hence **gʷóh₃-i̯-u* [n.], cf. Schrijver 1991:526) and **gʷəh₃-i-u̯ó-* ‘*fed, kept alive, alive’. The latter can serve as the basis for a secondary derivative **gʷeh₃i-u̯ó-nt-* with the characterising suffix **-nt-*, which exhibits the [˘ H ˘ ˊ] schema and therefore triggers laryngeal metathesis, hence **gʷih₃-u̯ó-nt-es* ‘living beings, the living world’.[10] This results in a secondary root **gʷih₃-*

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of a schwa in classical languages; cf. Ved. *jātá-* ‘born’, Com. Ir. **dᵊātá-* ‘id.’ (< IIr. **jaH-tá-*).

9 In addition to the forms cited below, this deverbal noun is attested by the secondary derivative **ǵʰéh₂-i-tu-* [m.] ‘lack, shortage’ reflected by Com. Ger. **gaiƀw-á-* [n.] ‘lack’. With another *Wortbildung* but an almost identical meaning, see also Vulg. Lat. **fāmen* (< PIE **ǵʰéh₂-mn̥*) ‘lack, famine’ (cf. Sard. *famen* [m.] ‘famine’), as well as Goth. *gaidw* [n.] ‘lack’, OE *gǣd* [n.] ‘id.’ and the OSax. compound *mēti-gēd(e)ono* [gen.pl] ‘famines’.

10 For a formal parallel, cf. PIE **ǵerh₂-o-* [adj. or n.] ‘old’ vs. **ǵérh₂-o-nt-* ‘old man’ (Oettinger 2001:303).

'to live' hence formations such as *g^{u}ói̯h_3-o- [m.] 'life' (Av. *gaiia-*) and OCS *goiti* 'to make live, to feed' (< *g^{u}oi̯h_3-éi̯-e/o-*).[11]

A secondary stem *g^{u}óh$_3$-i-t- 'the act of feeding' is reflected by the pseudo-root-noun *g^{u}ói̯t, *g^{u}it- 'feeding' and its *vr̥ddhi*-derivative *g^{u}ei̯t-ó- 'relative to feeding'[12] (cf. Com. Celt. *bēto- < *beito- 'food' (*IEW*:468).[13] Based on these derivatives, Caland-like adjectives *g^{u}it-ú- and *g^{u}it-ró- 'nourishing' were created, hence the substantivised nouns *g^{u}ít-u- and *g^{u}ít-ro- 'womb, matrix' found in Com. Germ. *k^{w}iƀra^{z} and *k^{w}iƀu^{z} 'id.'.

1.4. *lih$_3$-tó- (< *ləh$_3$-i-tó-) 'poured'

The starting point is a *to*-stem *lih$_3$-tó- 'poured' (< *ləh$_3$-i-tó-), whence Core IE *√lei̯h$_3$- 'to pour, to rain' (*LIV*^{2} s.v. *lei̯H-), reflected by OCS *lějǫ* 'to pour' and Latv. *leju* 'id.'. Note the amphidynamic *tu*-stem *léi̯h$_3$-tu-, *lih$_3$-téu̯- 'poured liquid', reflected by Goth. *leiƀu* [n.] 'wine' (Neri 2003:315–318). The primary root was probably PIE *leh$_3$- 'to pour',[14] with an *i*-present *lóh$_3$-i- echoing a *u*-present doublet *lóh$_3$-u- 'to pour' endowed with a *to*-stem *luh$_3$-tó- (< *ləh$_3$-u-tó-) 'poured; washed', whence the Core IE neo-root *leu̯h$_3$- 'to wash' (on which see further in § 2.3).

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11 A word formation parallel is provided by the *i*-stem *póh$_2$-i 'what is watched (over), herd' built on the PIE root *peh$_2$- 'to watch (over), to pasture' (Garnier 2012:41), hence secondary derivatives such as *poh$_2$-i-món- [m.] 'shepherd' (± Hom. Gk. ποιμήν, Lith. *piemuõ*, *-eñs*) and *póh$_2$-i̯-u [n.] 'herd' (Hom. Gk. πῶϋ < Com. Gk. *πῶγυ).

12 According to Vendryes (*LEIA*, B:47), this is not to be confused with the disyllabic OIr. *bíad*, arch. *bïad* [n.] 'nourriture, tribut de vivres, tribut en nature payé par un vassal' (< Com. Celt. *biyaton*). The denominative verb OIr. *biathaid* 'he feeds' (< Com. Celt. *bētā-ye/o-) comes from a Com. Celt. *bēto- [m.] 'food' (< *beito- < i.-e. *g^{u}ei̯t-ó-), seen in MW *bwyd* [m.] 'food', OCorn. *buit* gl. 'cibus uel esca'.

13 As a parallel, cf. *pói̯(h$_1$)-t- 'satiety' hence the pseudo-root-noun *pói̯t-, *pit-ós 'corpulence' reflected by Ved. *a-pít-* 'not swelling', the derivative *pit-ú- [m.] 'food' seen in Ved. *pitú-* and Com. Celt. *itu-, and its *vr̥ddhi*-derivative PIE *pei̯t-ú- 'relative to food' (Widmer 2004:35).

14 See § 2.3 for the motivations behind positing an *h$_3$.

1.5. **(s)kóh₂-i* [n.] 'chip'

The primary root is PIE **keh₂-* 'to dig, cut, make chips' (*LIV*² **k(ʷ)eh₂-* 'to dig'), reflected by Ved. *khánati* 'to dig'.[15] A neuter *i*-stem **(s)kóh₂-i* [n.] 'chip' would be the starting point of an action noun **skóh₂-i-t-* 'cutting' (hence Core IE **skói̯t-*). Such a formation is paralleled by PIE **kóh₂-u* [n.] 'incision' (cf. § 2.1.) and **kóh₂-u-t-* 'action of cutting (leather)', hence Core IE **kóu̯t-*, reanalysed further as a root-noun **kóu̯t-*, **kut-ós* [f.] 'skin' (cf. Lat. *cŭtis*, *-is* [f.] 'id.') vs. the *to*-stem **(s)kuh₂-tó-* 'cut' (< **(s)kəh₂-u-tó-*), on which see below (§ 2.1).

2. PIE **Cé/óH-u* → **CuH-tó-* (< **CəH-u-tó-*)

The mechanism is the same for the suffix *-u-* as for the suffix *-i-*. A derivative **Cé/óH-u-* from a root **CeH-* serves as a basis for a secondary derivative **CəH-u-C(C)V́-*. The sequence of three short vowels triggers the metathesis of *-u-* and the laryngeal, hence **CuH-C(C)V́-*, thus a neo-root **Ceu̯H-*.

2.1. **kéh₂-u-*

Toch. B *kau-*/Toch. A *ko-* 'to destroy, kill' (< PIE **kéh₂-u-*) is a *u*-present built on a primary root **keh₂-* 'to cut, dig, perforate' (on which see above, § 1.4). The (secondary) action noun **kuh₂-tí-* [f.] (< **kəh₂-u-tí-*) [˘ H ˘ ˊ] 'cutting' was concretised as 'leather, skin', reflected by Com. Germ. **χūđīz̄* 'skin' (cf. OHG *hūt* 'Haut', ON. *húð* 'skin', OE. *hȳd* 'id.'). Toch. A *kāc* 'skin' is likely to reflect **kuh₂/₃-tí-* according to Hilmarsson (1985:163), because a final laryngeal **h₁* (**kuh₁-tí-*) would produce Com. Toch. ***kwäcä*, whence Toch. A ***kūc*.

15 Cf. **(s)kóh₂-i* [n.] 'cut' hence the derived adjective **(s)keh₂-i-u̯ó-* 'armless, left-handed' (Hom. Gk. *σκαῖϝος 'left' = Lat. *scæuus* 'id.'). These forms cannot be separated from Com. Gk. *καῖϝαρ [n.] 'pit' based on a secondary derivative **kéh₂-i-u̯-r̥*, for which see Ved. *kévaṭa-* [m. or [n.] (?)], only attested in the locative *kévaṭe* (Mayrhofer, *EWAia* I:400). Note also the Hesychian gloss καίατα· ὀρύγματα, ἢ τὰ ὑπὸ σεισμῶν καταρραγέντα χωρία from Gk. Com. **kaĩwar* [n.] 'pit', pl. **kaíwata*. Cf. also the Spartian toponym Καιάδᾱς [m.] 'pit or subterranean prison' (Thuc. 1.134.4).

The full-grade *√*keu̯h₂-* is from **kuh₂-* after metathesis (Nikolaev 2010:201). Contrarily to what is commonly assumed, Lat. *cŭtis*, *-is* [f.] 'skin' is poorly accounted for by the effect of the so-called Dybo's law (Garnier 2016a:165), i.e. a pretonic shortening of PIE **Ci/uH-* in Italo-Celtic. We may rather start with an acrostatic *u*-stem **kóh₂-u* [n.] 'incision, notch, cut', the source of a secondary derivative **kóh₂-u-t-* [f.] 'cutting (leather)', whence Core IE **kóu̯t-*, endowed with a root-noun inflexion: **kóu̯t-*, **kut-ós* [f.] 'skin' (cf. Lat. *cŭtis*, *-is* [f.] 'id.'). The Greek adverb ἐγκῡτί 'down to the skin' is a hypostatic formation from a locution **en=kut-í* 'in cute' with a locative **kut-í* 'in the skin'. Besides that, there is a "real" zero-grade with *s* mobile **(s)kuh₂-tó-* 'cut', resulting in Com. Gk. **skū-tós*, which is ultimately the source of the secondary neuter stem σκῦτος, σκύτους [n.] 'leather' with *neutrale Motion*. The variant with *s* mobile is reflected by a ninth class present **skunā́ti* (< **(s)ku-n-éh₂-ti*) 'to pierce', replaced by a productive fifth class present Ved. *ā-sku-no-ti* 'to pierce (ears)'.[16]

2.2. **léh₂-u-* 'to cut'

Nikolaev (2010:199–203) reconstructs a primary root **leh₂-* 'to cut, to split, to cleave' to account for Gk. λᾶας m.f. '(single) stone' which would have been coined from an old collective stem: Com. Gk. **lāha* [n.pl.] 'mass of stones, heap of stones' (< PIE **léh₂-es-h₂*). According to him, the root **luH-* 'to cut' of Gk. λύω 'to loosen, untie' and Ved. *lunā́ti* 'to cut' (Inj.Aor. *śíro nv àsya rāviṣam* RV 10.86.5 'I will break his head') is to be reconstructed as **luh₂-*, with an analogical full-grade **leu̯h₂-* 'to cut'. The starting point may have been a *to*-stem **luh₂-tó-* (< **ləh₂-u-tó-*) [˘ H ˘ ˊ] 'cut, loosened', from an old *u*-present **léh₂-u-* 'to cut'.

There was maybe also an old *i*-present **léh₂-i-* 'to harm', eventually reflected by an adjective **leh₂-i-u̯ó-* 'maimed, left-handed' (Lat.

16 Cf. also Lat. *scaurus* [adj.] 'deformed at the feet' and Late Ved. *khora* 'limping, lame' (Prakrit for **skorá-*), which can be explained in a similar way from PIE **(s)keh₂-ur-ó-* 'mutilated (*vel sim.*)'.

læuus ‘left’, Gk. *λαιϝός, OCS *lěvŭ*).[17] There was also a dental stem **leh₂-í-d-* ‘injury, lesion’, with derivatives **leh₂-i-d-ó-* ‘wounded’ (cf. Lat. *lædere* ‘to harm’ which is back-formed from a durative stem **lædāre* ‘to beat’).

2.3. **léh₃-u-* ‘to pour (a liquid)’

According to Melchert (2011:130), Hitt. *lāḫ(ḫ)u-* ‘to pour (a liquid)’ is originally a *ḫi*-verb built on a PIE *u*-present **lóh₃-u-* ‘to pour’, of a primary root **leh₃-* ‘to pour’ (see above, § 1.4). The classical reconstruction of Hitt. *lāḫ(ḫ)u-* as PIE **léh₂-u-* may be given up, as by Kümmel (*LIV*^{2015}:53 s.v. **leh₃-u-* ‘gießen, waschen’). Melchert assumes that in Core Indo-European the *to*-stem with metathesised zero-grade **luh₃-tó-* (< **ləh₃-u-tó-*) [˘ H ˘ ˊ˘] ‘poured’ became a participle ‘washed’, which would be ultimately the source of the back-formed Core IE root **leu̯h₃-* ‘to wash’ (cf. Myc. *re-wo-to-ro* [léwotron] ‘bath’ < **léu̯h₃-tro-*).

3. PIE **Cé/óH-R̥ → *CR̥H-tó-* (< **CəH-R̥-tó-*)

3.1. **√bʰeh₂-* ‘to shine’ (Ved. *bhā́ti*, Hesych. φάντα· λάμποντα ‘glowing’)

We may start here with an action noun **bʰéh₂-l̥* [n.] ‘brightness’ whose possessive derivative was PIE **bʰəh₂-l̥-tó-* [˘ ˘ ˊ˘] resulting in **bʰl̥h₂-tó-* ‘bright’ with the regular metathesis triggered by the three morae’s law. The etymon **bʰl̥h₂-tó-* ‘bright’ could account for Lith. **bíltas* adj. ‘white’ whose existence may explain the acute intonation of the full-grade verb *bálti* ‘to become white’ (whence adj. *báltas* ‘white’) vs. *bãlas* adj. ‘white’ (< **bʰolh₂-ó-*). Accordingly, the *o*-grade would trigger a circumflex intonation: Lith. ***baĩti* and ***baĩtas*. The acute intonation is analogical to some zero-grade formation such as Lith. **bíltas*.

17 The same derivation may also apply for Lat. *scæuus* ‘left’ if from PIE **(s)keh₂-i-u̯ó-* ‘maimed, left-handed’.

3.2. *√*deh₂*- ‘to split, divide, share’

Primary root **deh₂*- meaning ‘to divide, to share, to portion’, endowed with a spurious **-i* from a present stem: cf. Hom. PN Δαίτωρ, from *δαίτωρ (< PIE **déh₂-i-tor-*) ‘apportioner’, Hom. δαιτύς [f.] ‘meal’ (ultimately from PIE **déh₂-i-tu-*) and δαίς, δαιτός [f.] ‘each person’s portion of a communal meal, meal, banquet, feast’ (< PIE **deh₂-í-t-*). We may connect this primary root **deh₂*- with Lith. *dalìs* ‘part, portion’ (denominative verb *dalýti* ‘to share’) and, further, with Samogitian *delù* (*dìlti*) ‘to become blunt’ from a root ‘to hew, to split’ reconstructed as PIE **delh₁*- (*LIV*²:114). In fact, the adduced evidence of Lat. *dolēre* ‘to be painful, to hurt’ to assume a laryngeal **h₁*—as if from a PIE iterative ***dolh₁-éi̯-e/o-* ‘to hurt again and again’—is very weak: for Lat. *doleō*, *-ēre*, we may rather assume an old essive denominative Com. It. **dol-ē-* ‘to be painful’ based on a nominal stem **dol-o-* m. ‘cutting, splitting’ (< **dólH-o-*), echoed by the factitive denominative **dol-ā-* ‘to hew’ (cf. Lat. *dolāre* ‘id.’). As a result, nothing forbids us from assuming **delH-* with **H* = **h₂*, since Lat. *dolāre*, *-āuī* cannot reflect Com. It. ***delă-i̯e/o-* < PIE ***délh₁-i̯e/o-* (*pace* Kümmel, *LIV*²:114 s.v. **delh₁-* fn. 4), because we would expect here Com. It. ***del-i̯e/o-* < PIE ***dél(h₁)-i̯e/o-* with the effect of Pinault’s law (deletion of the root’s final laryngeal in a context such as **CéR(H)-i̯e/o-*).[18] Besides, Lat. *dolābra* [f.] ‘axe’ is likely to be a productive instrument noun in *-bra* (< **-dʰreh₂*) built on *dolāre* ‘to hew’, because an inherited ***délh₁-dʰreh₂* assumed by Rix (1999:527) would undergo the laryngeal deletion in a context **CH.CC* > *C.CC* as shown by Hackstein (2002). The starting point would be an action noun PIE **déh₂-l̥* [n.] ‘action of splitting (wood)’, with a derivative PIE **dəh₂-l̥-tó-* [˘ ˘ ˊ] ‘possessing split’ resulting in a quasi-participle **dl̥h₂-tó-* ‘hewed’, on which was back-formed a full-grade root **delh₂-* ‘to hew, to split, to share’.

18 On which, see Pinault (1982).

3.3. *√*g$^{\text{u}}$eh$_2$*- ‘to be steady, stable’ (Gk. βέβηκα ‘to be steady’, βέβαιος ‘firm, stable’)

An acrostatic PIE *g$^{\text{u}}$óh$_2$-r̥* [n.] ‘stability, heaviness, heavy mass’ (specialised as ‘millstone’) could have been the source of a derivative *g$^{\text{u}}$əh$_2$-r̥-nó-* ‘endowed with heaviness’ [◡ ◡ ◡́], which would have eventually resulted in a ‘neo-primary’ adjective *g$^{\text{u}}$r̥h$_2$-nó-* ‘heavy’, source of a *vr̥ddhi*-derivative *g$^{\text{u}}$érh$_2$-nu-* ‘millstone’ (Goth. *qairnus* ‘id.’), with a doublet *g$^{\text{u}}$r̥h$_2$-néh$_2$* ‘millstone’ (cf. Lith. *gìrna* [f.] ‘millstone’ and Latv. *dzir̃nas* [f.pl.] ‘id.’). There was also another doublet: PIE *g$^{\text{u}}$r̥h$_2$-nú-h$_2$* [f.] ‘millstone’ (OCS *žrъny* [f.] ‘millstone’, Ru. *жёрнов* [m.] ‘id.’, SCr. *žrvânj* [m.] ‘handmill’, OPrus. *girnoywis* ‘handmill’, Latv. *dzir̃nus* [f.pl.] ‘id.’).

3.4. *√*g$^{\text{u}}$eh$_3$*- ‘to pasture, put to graze’ (Gk. βόσκω ‘id.’ < PIE *g$^{\text{u}}$h$_3$-sḱ-é/ó-*)

Primary root extensively reflected in Greek: βόσις [f.] ‘grazing, food’ (< PIE *g$^{\text{u}}$h$_3$-tí-*), agent noun βοτήρ [m.] ‘herdsman, shepherd’ (< PIE *g$^{\text{u}}$h$_3$-tḗr*) with a by-form βώτωρ [m.] ‘shepherd’ (< PIE *g$^{\text{u}}$éh$_3$-tor-*).[19] We may assume PIE *g$^{\text{u}}$óh$_3$-r̥* [n.] ‘pasture’, echoing the *i*-stem *g$^{\text{u}}$óh$_3$-i* [n.] ‘pasture’ (on which see above, § 1.3). A PIE derivative *g$^{\text{u}}$əh$_3$-r̥-tó-* ‘endowed with pasture’ [◡ ◡ ◡́] would appear as *g$^{\text{u}}$r̥h$_3$-tó-* meaning both ‘having grazed, being fed’ and ‘devoured’. The well-known root *g$^{\text{u}}$erh$_3$-* ‘to devour’ could be back-formed on such a zero-grade form.

3.5. *√*keh$_2$*- ‘to hew’ (on which see below, § 2.1)

A PIE action noun *kéh$_2$-l̥* [n.] ‘splitting’ would have produced a derivative *kəh$_2$-l̥-tó-* [◡ H ◡ ◡́] surfacing as metathesised *kl̥h$_2$-tó-* ‘having been beaten down (of a tree)’, source of the Core IE root *kelh$_2$-*

19 Note also PIE *g$^{\text{u}}$óh$_3$-u* [n.] ‘cattle’ from *‘what is put to graze’ (Beekes 1985:110), source of an holokinetic ‘singulative’ stem *g$^{\text{u}}$éh$_3$-ōu̯-, *g$^{\text{u}}$h$_3$-ṓm* (< *g$^{\text{u}}$h$_3$-óu̯-m*) m.f. ‘head of cattle’ (Lubotsky 1990:133), renanalysed as a root-noun *g$^{\text{u}}$óu̯-* m.f. ‘cattle, cow’. The PIE dative singular PIE *g$^{\text{u}}$h$_3$-éu̯-ei̯* resulted in Core IE *g$^{\text{u}}$óu̯-ei̯* (Ved. *gáv-e* with aberrant paroxytonesis for a root-noun). Further bibliographical data in *NIL* (191 fn. 1).

'to hit, to beat' (Lat. *per-cellō* 'to beat down', OCS *koljǫ*, *klati* 'to beat').[20]

4. PIE **CR̥H-tó-* (< **CəH-R̥-tó-*)

4.1. **léh₂-om-* [f.] 'hollow, pit'

We may assume an old holokinetic stem built the PIE root **leh₂-* 'to cut, split, cleave' (on which see above, § 2.2), of the same pattern as PIE **h₁éh₂-om-* [f.] 'heat of the day' (Pinault 2017:653). PIE **léh₂-om-* [f.] 'hollow, pit' was endowed with a collective stem **léh₂-m-eh₂* reflected by Lat. *lāma* [f.] 'marsh, puddle, swamp, morass', like PIE **ǵʰéi̯-om-* [f.] 'snow' exhibits a collective stem **ǵʰéi̯-m-eh₂* (OCS *zima* [f.] 'winter'). We posit another derivative from **léh₂-om-* 'hollow, pit', namely PIE **ləh₂-r̥-tó-* [◡ H ◡ ◡́] 'endowed with hollowness', which became **lr̥h₂-tó-* 'dug', hence the neo-root **lemh₂-* 'to break (the ground),[21] to dig' (*LIV*[2] s.v. **lemH-*). This root matches Derksen's (2015:292) proposal that Lith. *lomà* [4; f.] 'depression, hollow' and Latv. *lãma* [f.] 'hollow in a field, pool, pit' point back to a stem **lōmH-éh₂* 'hollow'.[22]

4.2. **sméh₂-om-* [f.] 'flotation, the fact of being stagnant'

The PIE root **(s)neh₂-* 'to swim' may have originally meant *'to float' (cf. **néh₂-u-* 'boat'). A holokinetic stem **sméh₂-om-* [f.] 'flotation, the fact of being stagnant' may have had a derivative **snəh₂-r̥-tó-* [◡ H ◡ ◡́] > **snr̥h₂-tó-* 'possessing flotation, floating', from which a full-grade root **snemh₂-* was back-formed, which is reflected by Com. Germ. **swimma-* 'to swim', admittedly from **snem-na-* but that we account for as the reflex of **snemH-a-* (< IE **sném̥h₂-e/o-*), with the

20 The root **skelH-* '*aufschlitzen*, *spalten*' (*LIV*[2]:553) must be amended as **(s)kelh₂-* with *s* mobile.

21 Note the Balto-Slavic name for 'ploughshare', reflected by Dial. Lith. *lẽmežis* (*-io-* m.) 'ploughshare' and OCS *lemešĭ* m. 'plought' (< Post-IE **lem-es-i̯ó-*), built on a *s*-stem **lémh₂-e/os-* [n.] 'breaking, ripping of the ground' from this very root **lemh₂-* 'to break (the ground), to dig'.

22 Which he considers as formally unrelated to Lat. *lāma* (< PIE **léh₂-m-eh₂*).

well-known sonorant gemination triggered by a following laryngeal: **-VRHV-* > Com. Germ. **-VRRV-*.

4.3. **dʰu̯éh₂-l̥* [n.] 'smoking'

According to Kümmel (*LIV*²:158), the PIE root **dʰu̯eh₂-* means 'to smoke, to breath'.[23] We may assume an action noun **dʰu̯éh₂-l̥* [n.] 'action of smoking' with a derivative **dʰuh₂-l-ó-* 'smoky, dusty', endowed with an abstract **dʰuh₂-l-í-* [f.] 'dust' reflected by Skr. *dhūli-* [f.] 'dust', Lith. *dū́lis* 'smoke used in bee-culture' and Lat. *fūlīgō* [f.] 'soot'.[24] From **dʰu̯éh₂-l̥* [n.] 'action of smoking', we would also expect an heteroclitic stem **dʰuh₂-n̥-tó-* [ᵕ H ᵕ ˊᵕ] 'smoky'[25] metathesised as **dʰu̯n̥h₂-tó-* which, as a result of the metathesis we posit, would be the source of the secondary root **dʰu̯enh₂-* 'to make a dense smoke' reflected by Ved. *ádhvanīt* 'he produced a thick smoke' (< **dʰu̯énh₂-t*) and *dhvāntá-* 'dark' (for **dhvā-tá-* 'smoky' < **dʰu̯n̥h₂-tó-*, with analogical restitution of the nasal). Note that Zehnder (*LIV*²:159 s.v. **dʰu̯enH-* n. 1) already suggested that the root **dʰu̯enH-* '*qualmen*, *rauchen*' could be **dʰu̯enh₂-* "Falls eine Verwandschaft mit **dʰu̯eh₂-* 'Rauch machen' besteht."

4.4. **ǵʰéh₂-l̥* [n.] 'crack, cleft, gap'

We analyse Gk. χηλή [f.] 'cloven hoof of cattle' as the reflex of a PIE **ǵʰéh₂-l̥* [n.] 'crack, cleft, gap' built on a root **ǵʰeh₂-* 'to cleave, break open'.[26] As above with the previous example, next to **ǵʰéh₂-l̥* we could expect an heteroclitic zero-grade stem **ǵʰəh₂-n̥-tó-* 'gaping'

23 According to Kloekhorst (2008:189), the full-grade **dʰu̯eh₂-* is ensured by Hitt. *antuu̯aḫḫaš*, gen. *antuḫšaš* [c.] 'man, human being', from PIE **en-dʰu̯éh₂-os-*, **en-dʰuh₂-s-ós* 'having breath inside'.

24 From an earlier **fūlis*, *-is* [f.] 'darkness' according to de Vaan (2008:248).

25 On the same pattern as PIE **ń̥-seh₂-u̯-n̥-to-* 'without sun' (Com. Gk. **ahā́wato-*, Hom. ἀάατος) vs. **séh₂-u̯-l̥* [n.] 'sun' (Nikolaev 2012:213).

26 Gk. χημή 'mussel' (< PIE **ǵʰéh₂-m-eh₂*), whose connection with χηλή is mentioned but doubted by Chantraine and Beekes, is probably also related, via a noun **ǵʰéh₂-om-*. Beekes, s.v. χάσκω, also posits a primary root **ǵʰeh₂-* and agrees with us in interpreting χημή as a direct reflex of this root.

[˘ H ˘ ˊ] metathesized as **ǵʰn̥h₂-tó-* [ǵʰnəh₂tó]. It is the basis for a secondary **ǵʰn̥h₂-ónt-* 'gaping'[27] [*ǵʰənh₂ónt] seen in the aoristic participle Gk. χανόντ-, the pivot-form explaining the old χανεῖν and κέχηνα (see Beekes 2010 s.v. χάσκω 'to gape, yawn, open'), on which a whole family of words was built.[28]

4.5. **kóh₂-r̥* [n.] 'pit'

A similar picture can be drawn for the PIE root **keh₂-* 'to dig' (cf. *LIV*²:344 s.v. ?2.**k*$^{(u)}$*eh₂-* 'to dig' for various attestations). Next to a noun **kóh₂-r̥* [n.] 'pit', an action noun **kóh₂-r̥-t-* 'the act of digging' surfacing as **kó.rt-* from which **kort-ó-* 'pit'[29] (cf. Ved. *kartá-* m. 'cavity, hole'),[30] we posit a form **kəh₂-n̥-tó-* [˘ H ˘ ˊ] metathesised as **kn̥h₂-tó-* [knəh₂tó] 'digged, hollowed out'. This latter word can then be the basis for a **kn̥h₂-ónt-* 'id.' [*kənh₂ónt], for which cf. IIr. **kanáH-ti* 'to dig a pit'.[31,32]

5. A new PIE root **bʰeh₂-* (2) 'to split, burst, break out, sprout'

One of the consequences of the metathesis phenomenon described in the previous sections is that it opens new etymological possibilities

27 The derivative **ǵʰn̥h₂-tó-* 'gaping' was reanalysed as a primary formation **CC-tó-*, which was secondarily endowed with an "active" doublet **ǵʰn̥h₂-ónt-* 'opening' (cf. Core IE **g*^{wh}*n-ónt-* 'killing' vs. **g*^{wh}*n̥-tó-* 'killed').

28 See for instance χανδόν [adv.] 'with mouth wide open, greedily, eagerly', χανδός [adj.] 'yawning, roomy', χᾰ́νος [n.] 'mouth'.

29 *Pace* Mayrhofer (EWAia I:317), Ved. *kartá-* '*Grube*, *Loch*' should be separated from √*KR̥T-* '*schneiden*'.

30 For a parallel, see **u̯óh₂-r̥* [n.] 'pivot' hence **u̯óh₂-r̥-t* [f.] 'the act of pivoting' (cf. Core IE **u̯órt-* [f.] 'door').

31 In Vedic, the aspiration of √*KHAN-* is analogical to the *kta*-form (IA **khitá-* 'dug' < PIE **kh₂-tó-*).

32 PIE **kn̥h₂-ónt-* can also explain, via reanalysis as a regular participle, the nasal infix present PIE **kn̥néh₂-ti* 'to dig a pit'. This is a general mechanism, which could explain the nasal infix as the reflex of a metathesised nasal suffix for roots of the shape **CVH-*, via a derivative **CəH-n̥-tó-* [˘ H ˘ ˊ] metathesised as **Cn̥H-tó-* [knəh₂tó] and reinterpreted as a present participle. The apparent nasal infix could then have been generalised by analogy to all root types.

and can therefore help unveil new roots. As an example, we shall briefly argue in this section for the existence of a root *$*b^heh_2$-*, homophonous with another root found in the *LIV*[2], and whose meaning can be reconstructed as 'to split, burst, break out, sprout'. We shall do so based a consistent series of etymologies based on such a root, covering only part of the material we have accumulated in this regard, which should be published elsewhere in full.

5.1. *$*b^hóh_2$-r̥* [n.] 'split, crack' and 'germination'

We reconstruct a proto-form PIE *$*b^hóh_2$-r̥* [n.] 'split, crack' and 'germination' based on its zero-grade derivative *$*b^hh̥_2$-r-ó-* 'broken' reflected by Gk. *φαρός 'ploughed' endowed with a privative ἄφαρος 'unploughed' (doublet ἀφάρωτος 'id.'). From this adjective, the present stem φαροῦν 'to plough' and the aorist φαρῶσαι were backformed. Gk. φάρος, -ους [n.] 'plough, ploughing'[33] is a derivation with *neutrale Motion* and *Suffixwechsel* from a thematic stem *φαρός 'ploughed'. Such a secondary derivation is paralleled in other branches of Core Indo-European, with the meaning of 'to break out, germinate':

- Com. Germ. *$*bara^z$* 'germinating' < PIE *$*b^hh̥_2$-r-ó-* 'breaking out'), hence *$*bar-iz-$*, *$*bar-za-$* [n.] 'barley' (ON *barr* [n.] 'id.'), Goth. *barizeins* 'made of barley' (Kroonen 2013:53).
- Com. Sl. *$*borŭ$* 'germinating' (< PIE *$*b^hh̥_2$-r-ó-* 'breaking out'), hence *$*bor-o$*, *$*bor-eš-$* [n.] 'grain', from which *$*bȍršьno$* 'flour' reflected by OCS *brašьno* [n.] 'id., ORu. *borošьno* [n.] '(farinaceous) food' (Derksen 2008:57).
- Com. It. *$*φaros$* 'germinating', hence *$*φar-os/*φar-es-$* [n.] 'wheat' and further Lat. *fār*, *farris* [n.] 'id.').

Another derivative of *$*b^hóh_2$-r̥* [n.] 'split, crack' was *$*b^həh_2$-r̥-tó-* 'endowed with split, broken' [˘ H ˘ ˊ˘] surfacing as a metathesised form *$*b^hr̥h_2$-tó-* 'split, broken', ultimately the source of a secondary PIE

33 Gloss. φάρος γὰρ ἡ ἄροσις (Hsch.).

root *b^herh_2- ‘to break (open)’ (cf. *LIV*^{2} s.v. *b^herH-) on which see above, § 1.1.[34]

We may also assume a doublet wit *s* mobile *sp^heh_2- ‘to sprout’ (maybe from PIE *ud-s-b^heh_2-) from which *$sp^hóh_2$-r̥ [n.] ‘sprouting’ enlarged by a voiceless tectal *$sp^héh_2$-r̥-g- ‘id.’ (on the same pattern as Ved. *ásṛj*- [n.] ‘blood’ < PIE *$h_1ésh_2$-r̥-g-), reflected by a thematic derivative PIE *$sp^həh_2$-r̥-g-ó- ‘which sprouts’ [◡ ◡ ◡́] > *$sp^hr̥h_2$-g-ó- ‘id.’, source of a substantivised paroxytone *$sp^hŕ̥h_2$-g-o- (cf. Gk. σφάραγος m. ‘Asparagus’). There is also a secondary *tudáti* present stem *sphū́rjati* ‘to burst, blossom’ (Garnier 2006:110–114) with root-accent.

5.2. *b^hoh_2-í-d- [f.] ‘splitting, split’

From this newly identified root *b^heh_2- ‘to split’, we may reconstruct an abstract *b^hoh_2-í-d- [f.] ‘splitting, split’ on the same pattern as Gk. λοπίδ- [f.] ‘scale, shell’ which exhibits a concrete meaning from an earlier action-noun *‘peeling (off)’. This stem *b^hoh_2-í-d- would regularly surface as a root-noun *$b^ho.íd$- [f.] with hiatus in Core Indo-European,[35] which was eventually resyllabified as *$b^hói̯d$- [f.] ‘split’ (cf. Ved. °*bhíd*- ‘breaking’), with a derivative *$b^hoi̯d$-ó- ‘split, hollowed’[36] and a productive action noun of the *logos*-class (Core IE *$b^hói̯d$-o-). This would be the starting point of the “classical” root *$b^hei̯d$- ‘to split’ (Ved. √*BHID*-).

34 Cf. Arm. *br-em* (< *bir-em) ‘to dig, dig up’, whence instrument-noun *br-ič‘* ‘pick’. Compounds referring to ‘ripping the ground’: *getn-a-bir* ‘foraging’ (from *getin* ‘ground’) and *erkr-a-bir* ‘id.’ (from *erkir* ‘earth’).

35 See for instance Gk. φαίδιμος ‘shining, noble’, with a Caland-doublet φαιδρός ‘bright, clear’, PN Φαίδων, pointing to a stem *φαιδός ‘shining’ (< PIE *b^heh_2-id-ó- ‘id.’) built on the homophonous root *b^heh_2- ‘to shine’.

36 The same *Derivationskette* applies to Lat. *lūcidus* ‘containing light, full of light’ (< PIE *$lou̯k$-i-d-ó-), to which a good cognate would be OE *līegetu* [f.] ‘lightning’ (< Com. Germ. *$laug$-$itō^n$ < PIE *$lou̯k$-i-d-$éh_2$) according to Garnier (2016b:82). Com. Germ. *$baita$- [n.] ‘boat’ could reflect *$b^hoi̯d$-ó- ‘hollowed [trunk]’ according to Kroonen (2013:48).

5.3. **b^{h}óh$_2$-i* [n.] ‘to break, to hit’

An old present stem **b^{h}óh$_2$-i-* ‘to break’ could be reflected by the zero-grade derivative **b^{h}əh$_2$-i-tó-* ‘broken, hit’ [˘ H ˘ ˊ˘] surfacing after metathesis as **b^{h}ih$_2$-tó-* (Com. Celt. **bī-to-* ‘struck, hit’). With the intransitive meaning of *‘to break out, to sprout’, we may add Gk. φῖτυ [n.] ‘seed, sprout’ (< **b^{h}ih$_2$-tú-*) and Alb. *(m-)bin* ‘to sprout, *ausschlagen*’ from a re-characterised present stem Proto-Alb. **bi-n-i̯e/o-* (Demiraj 1997:100), together with the “active” nasal-infixed present OIr. °*ben*, °*benat* ‘to hit’ (< Com. Celt. **bi-nă-* < **b^{h}i-n-h$_2$-*). To the *i*-present with acrostatic inflexion was associated a Luwian *paḫḫi-* [c.] ‘drum, gong’ (?) (< *‘beating’) and a denominative verb *paḫḫi̯a-* ‘to beat’ attested once in the passive imperative *pa-aḫ-ḫi-it-a-ru* ‘let be beaten’ (?) (KUB 35.49, IV, 3). There was also a neuter form ^{GIŠ}*paḫḫiša-* [n.] ‘whisk’ which, according to Puhvel (*HED* VIII:3), is a Luwoid form for the expected **paḫḫit*,[37] with the well-known particle *-ša* enlarging neuter dental stems in CLuwian, as for instance CLuw. *taruša* [n.] ‘statue’ from **tarud=ša* (on which see Melchert *et al.* 2003:186). For us, the Luwian stem **paḫḫit/páhhid-* could be the reflex of a PIE noun **b^{h}éh$_2$-i-d-* [n.] ‘beating’.[38]

37 The meaning of ‘whisk’ seems quite sure in Bo 4951 Rs. 3–5: ^{GIŠ}*paḫḫišan dān u̯al*[*ḫanzi* “they strike the whisk a second time’.

38 *Contra* Nikolaev (2017: n. 19), who analyses Hitt. *paḫḫi̯a-* ‘to beat’ and Luw. **paḫḫit-* ‘beater, whisk’ as the outcome of a PIE root **peh$_2$-* (2) ‘to beat, to strike, to mutilate’ supposedly attested in Gk. πηρός, Lesbian πᾱρος ‘infirm, invalid, blind, lame’. We may rather think here for the Greek words of the PIE **peh$_1$-* ‘to damage’ reflected by Gk. πῆμα [n.] ‘disaster, sorrow, distress’, ἀπήμων ‘without disaster, undamaged’, πημαίνω ‘to do harm, damage’. The Greek forms πηρός and Lesbian πᾱρος would then be accounted for as reflexes of a PIE adjective stem like **ph$_1$-eh$_2$-r-ó-* ‘possessing harm, harmed’, from an action-noun **ph$_1$-ḗh$_2$-r̥* [n.] ‘harming’. For this root, see also Av. *pāman-* [n.] ‘scabies’ and Lat. *pēminōsus* adj. ‘full of chinks, uneven, rough (said of the ground)’ which is the secondary derivative of a neuter stem **pēmen* ‘breach, chink’ (< PIE **péh$_1$-mn̥*).

5.4. *b^héh$_2$-u-d-* [n.] ‘beating’

A stem *b^héh$_2$-u-d-* [n.] ‘beating’ (source of a possible derivative *b^heh$_2$-u-d-[el]ó-* ‘beater’) would echo the etymon *b^héh$_2$-i-d-* [n.] ‘beating’ assumed in the previous section for Luw. *paḫḫit* ‘beater, whisk’. A denominative *b^heh$_2$-ud-eh$_2$-i̯é/ó-* ‘to beat’ resulted in Com. Germ. *baut-ōjan-* ‘to beat’ on which was back-formed a sixth-class strong verb *baut-an-* ‘id.’, like Lat. *læd-ere* ‘to harm’ (on which see § 2.2) is from a durative *læd-āre* (< *leh$_2$-id-eh$_2$-i̯é/ó-) ‘to beat again and again’, on the same pattern as *capere* ‘to take, seize’ vs. durative *oc-cup-āre* ‘to occupy (a place)’.

6. New thoughts on the Saussure-effect

The metathesis phenomenon described in the previous sections allows for a simple explanation of facts previously discussed under the term “Saussure-effect”, an effect which is therefore to be considered as a mirage, at least in some cases. This effect, following van Beek (2011: 130), can be defined in two steps as follows:

- *#HRo- > *Ro-* (loss of initial laryngeal before an *o*-grade root), where *R = *r*, *l*, *m*, *n*, *u̯*, and maybe *i̯*;
- **(C$_1$…C$_m$)oRH-C- > *(C$_1$…C$_m$)oRC-* (loss of a root-final laryngeal in an *o*-grade root, when followed by a consonant).

We shall now illustrate this reinterpretation of the facts on a few examples already discussed above. At first glance, Lat. *litāre* ‘make a libation’ and Gk. λιτή [f.] ‘liquid oblation’ (< *lit-éh$_2$) could be accounted for as analogical to a strong stem *lói̯t-* (gen.sg. *lit-ós*) ‘libation’, an *anit-*variant of *lói̯(h$_3$)-t-* due to the Saussure-effect. In fact, the underlying acrostatic strong grade *lói̯t-* may not reflect *lói̯(h$_3$)-t-* built on the secondary root IE *leu̯ih$_3$-* ‘to pour’ (on with see above, § 1.4), but rather a secondary derivative PIE *lóh$_3$-i-t-* [f.] (> Post-IE *lói̯t-*) ‘libation’ from an old neuter *i*-stem *lóh$_3$-i-* ‘poured liquid’.

The same holds for *g^{u}óh$_3$-i-t-* [f.] ‘the act of feeding’, built on *g^{u}óh$_3$-i-* [n.] ‘pasture’, and reinterpreted as a (secondary) root-noun *g^{u}ói̯t-*, *g^{u}it-ˊ ‘feeding’ (see § 1.3). It is therefore unnecessary to assume a Saussure-effect for explaining the loss of the laryngeal in a proto-form **g^{u}ói̯h$_3$-t-*.

On the same pattern, Core IE **skói̯t-* (see § 1.5) reflects PIE **(s)kóh₂-i-t-* 'the act of cutting', reanalysed as a root-noun **skói̯t-*, **skit-* 'wood', with a *vr̥ddhi* derivative of appurtenance, **skei̯t-ó-* 'wooden', whence Com. Celt. **skēto-* [m.] 'shield' (Matasović 2009: 342). On the *o*-grade, a by-form **skoi̯t-ó-* 'wooden' could account for Lith. *skiẽtas* [m.] 'reed (in a loom)' and Ru. *uu̯um*, *uu̯um-á* [m.] 'shield'. Once again, our interpretation discards the assumption of a Saussure-effect ***(s)kói̯(h₂)-t-*.

Lat. *collis* 'hill' < Com. It. **kol-ni-* < PIE **kol(h₃)-ní-*, with deletion of the laryngeal, is often adduced to illustrate the Saussure-effect, by which this deletion would be triggered by the *o*-grade. In fact, as convincingly explained by van Beek (2011), Gk. στέρνον 'chest' < PIE **stér(h₃)-no-* shows that the laryngeal loss is rather directly triggered by the phonetic environment **-VLHNV-* (where **L* stands for **l* or **r* and **N* for **n* or **m*). This also applies to Lat. *collis*. Nussbaum (1997:195) discusses the putative counterexample Lat. *uulnus* 'wound' < Com. It. **u̯elăno-* < PIE **u̯él(h₃)-no-*. But it can be accounted for as a back-formation from Lat. *uulnerāre* 'to wound', itself a denominative verb based on an heteroclitic neuter **u̯olur*, *u̯olin[er]is* < PIE **u̯élh₃-r̥* 'wound'. Note that van Beek's explanation directly explains Hom. οὐλή 'wound' < Com. Gk. **wol-nā́* < PIE **u̯olh₃-éh₂*, the laryngeal loss being unrelated to the *o*-grade but directly triggered by the conditioning environment **-VLHNV-*.

The relevance of the Saussure-effect in initial position is also dubious. A classical example is Hitt. *u̯arša* [c./n.] 'rain (?), fog (?)', often interpreted as reflecting **(h₂)u̯órso-* with Saussure-effect. Following Kloekhorst (2008:972), it should rather be analysed as reflecting **h₁u̯órso-*, from the PIE root **h₁u̯ers-* 'to rain', also the basis of Ved. *varṣá-* 'rain' and Epic Gk. ἐέρση 'dew' < Com. Gk. **ewérsā-* 'id.' (see also Beekes 2010:464).[39] Gk. οὐρέω 'to urinate' is explained by van Beek (2011:153 n. 48) as the result of a phonetic law **#ū-* > Gk. οὐ- (cf. also οὖθαρ 'utter' < **ūd^h-r̥* < **úh₁d^h-r̥*). According to this law, Gk. οὐρέω is not the cognate of Ved. *varṣáyati* 'to make rain' (< PIE

39 The Hesychian gloss ἄερσαν (acc.sg., Cretan) 'dew' can be explained out as a dialectal dissimilation, as suggested by Kloekhorst (*loc. cit.*).

h_1u̯ors-éi̯-e/o-). It is rather a denominative of οὖρον [n.] 'urine' (< PIE *uh_1-r-ó-*), etymologically linked to Lat. *ūrīna* [f.] 'urine' from Com. It. **ūri-* 'humidity' (< PIE *uh_1r-í-* < **ud-r-í-*), according to Lubotsky (2012:161).

Another example of a putative Saussure-effect in initial position is provided by the complementary distribution between Gk. ὀμιχέω 'to urinate' and the action noun μοιχός 'adulterer' < '*fututor*'. Yet ὀμιχέω does not reflect PIE *$h_3$mei̯ǵ^h- (*contra* Beekes 2010:1076), but rather a preverb *h_2o-* 'towards' on a root *mei̯ǵ^h-*, as a denominative of a noun *h_2o-miǵ^h-ó-* (of the **nizdó-*class). The absence of a laryngeal in the underlying root is confirmed by reflects in other languages (see for instance for Indo-Iranian the Vedic root √*MIH-* 'to urinate').

7. Conclusion

In this paper, we strengthen the case for a metathesis of PIE **CəHi/uCV́-* in rhythmic contexts of the form [˘ H ˘ ˊ]. More importantly, we show that this "three morae law" is not restricted to **i/*u*, but can be generalised to all sonorants, namely **r̥*, **l̥*, **m̥* and **n̥*. We also show that this phenomenon licenses a new, more natural analysis of the facts generally interpreted as a laryngeal loss triggered by the *o*-grade and discussed under the term of "Saussure-effect". Our hypothesis paves the way towards new etymological perspectives and the identification and analysis of secondary roots, as illustrated throughout the paper, especially with the identification of a new primary PIE root **b^{h}eh$_2$-* (2) 'to split, burst, break out, sprout'.

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